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Critical minerals: from production to resilient value chains

By

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Critical minerals: from production to resilient value chains

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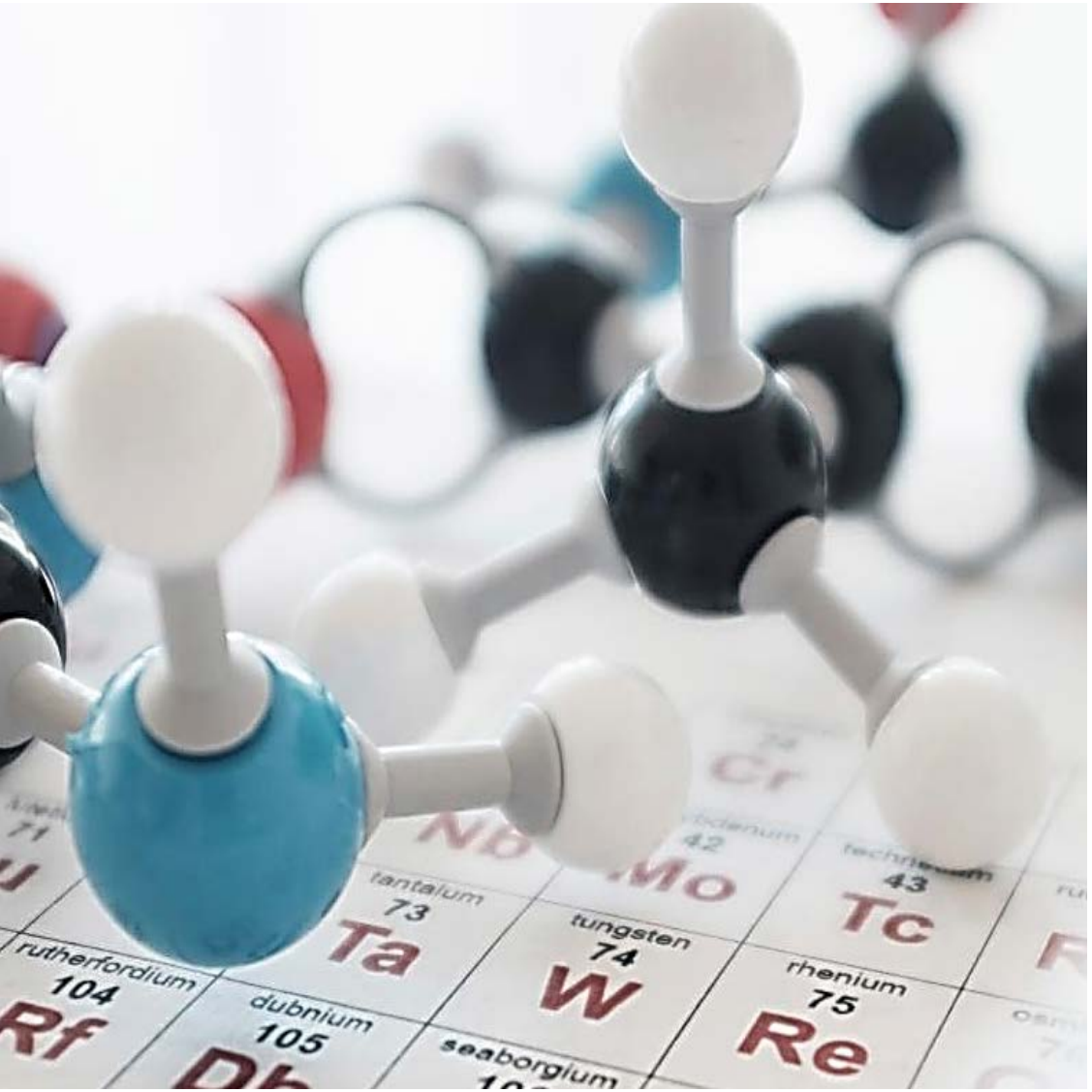
Critical minerals and resilient value chains



What is driving the demand for critical minerals?

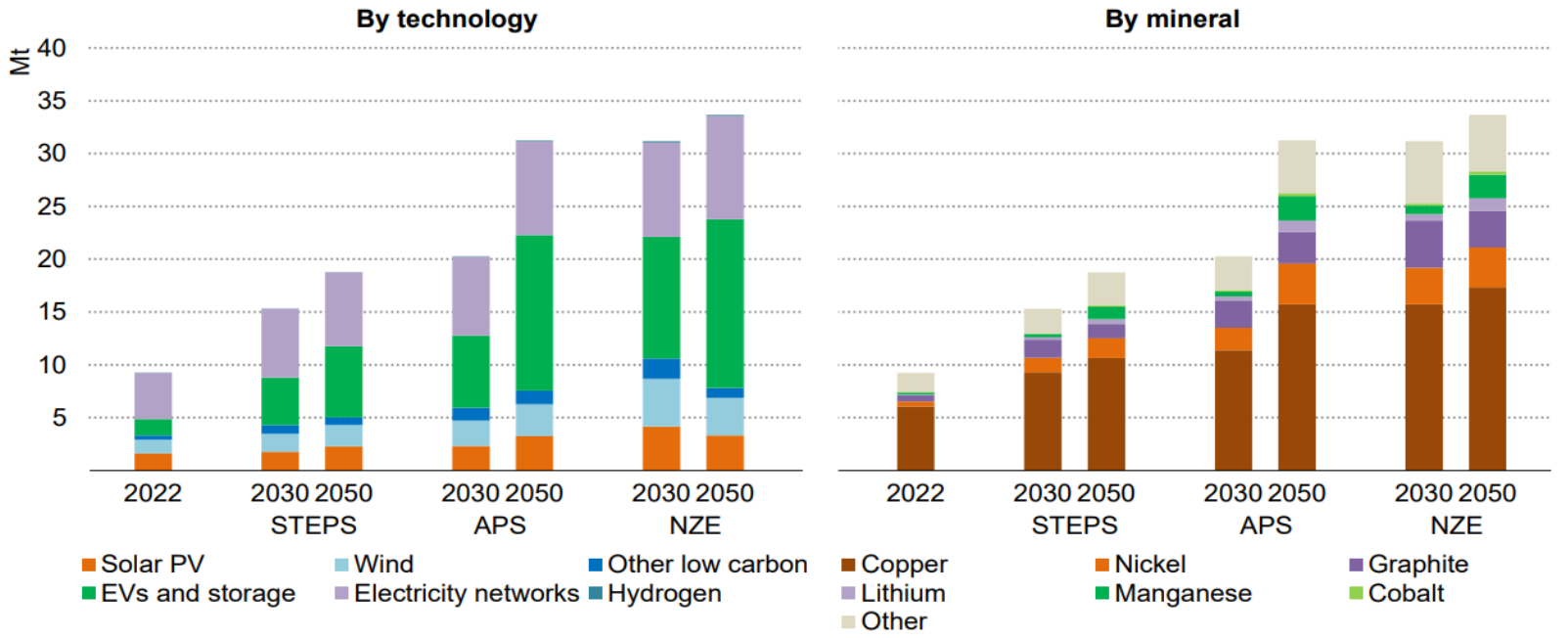
Leveraging opportunities to build resilient supply chains (a focus on Africa)

- Overview of Africa's critical minerals sector
- The Energy Quadrilemma
- Building domestic and regional supply chains
- Becoming a global supplier of choice

Way forward: Four key priorities

1. What is driving demand for critical minerals?

Mineral demand for clean energy technologies by scenario (IEA)



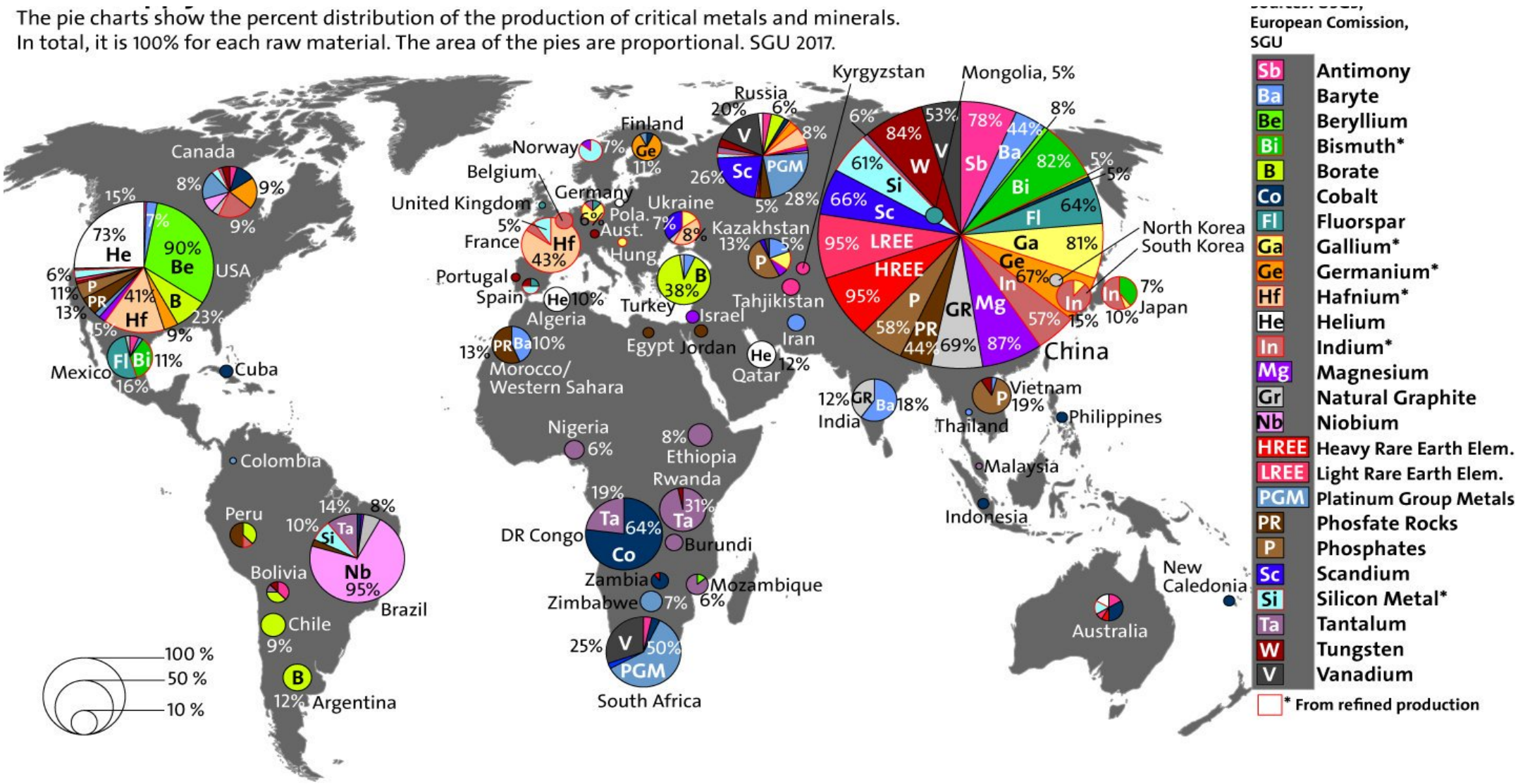
Notes: STEPS = Stated Policies Scenarios; APS = Announced Pledges Scenario; NZE = Net Zero Emissions by 2050 Scenario. Includes most of the minerals used in various clean energy technologies, but does not include steel and aluminium.

Demand for critical minerals is set to grow over the next two decades as the world pursues net zero goals; overall requirements rise by as much as 4 times, but individual minerals (lithium to rise even faster)

STEPS = Stated policies scenario (trajectory based on today's policy setting)
APS = Announced pledges scenario (if aspirational targets are met in full)
NZE = Net zero scenario by 2050 (if the word reaches 1.5 degrees stabilization and universal access to energy

Source: IEA, 2022

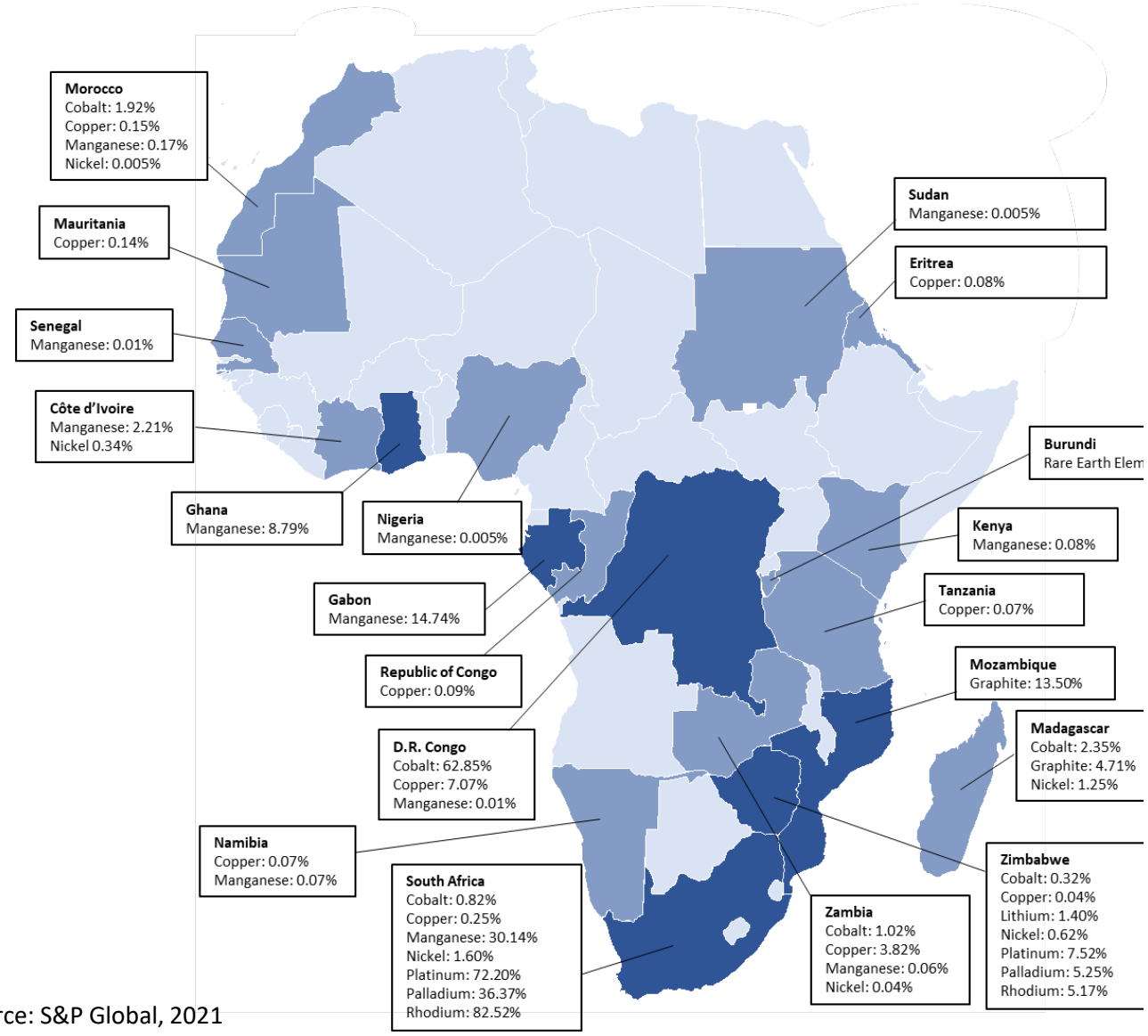
2. Global supply of key critical minerals and metals

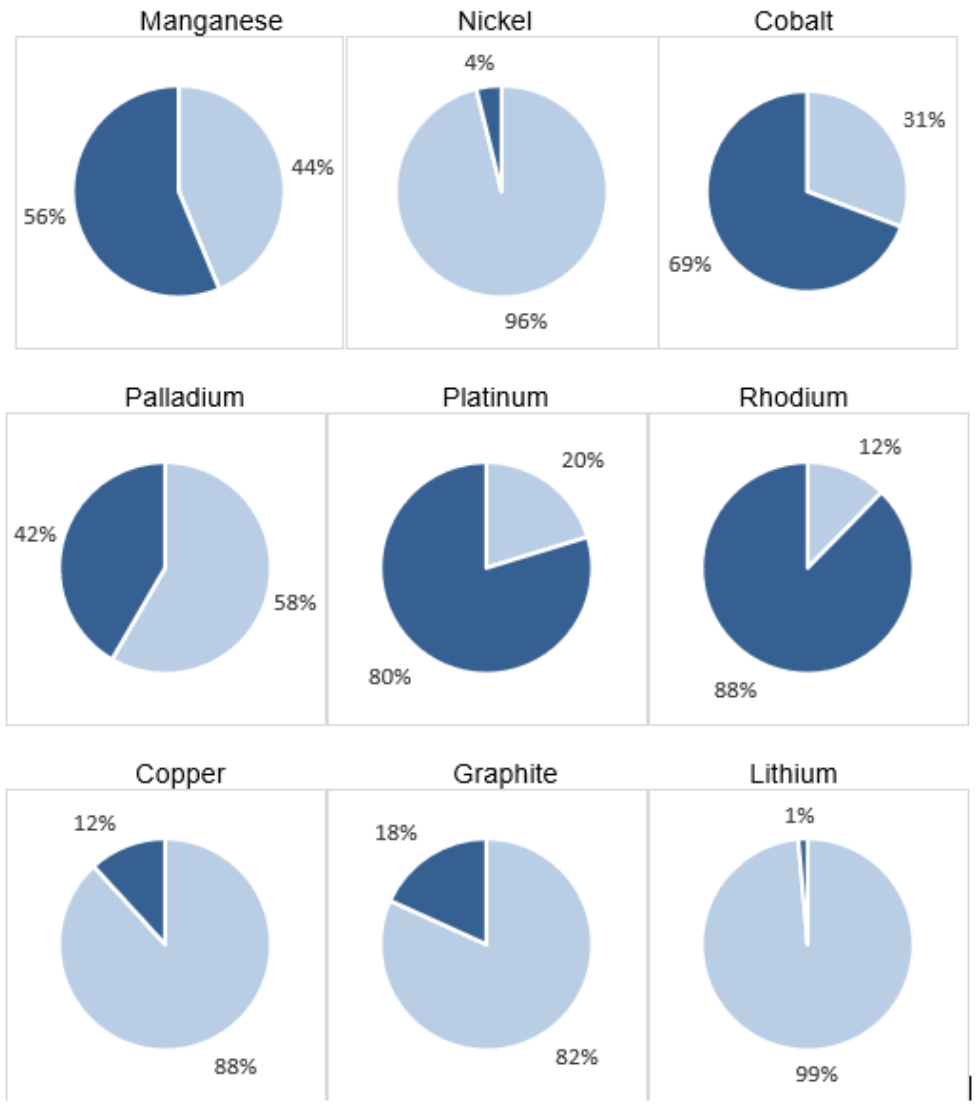


SGU, 2017

2. Critical Mineral Overview (developing countries)

Share of African production compared to global production



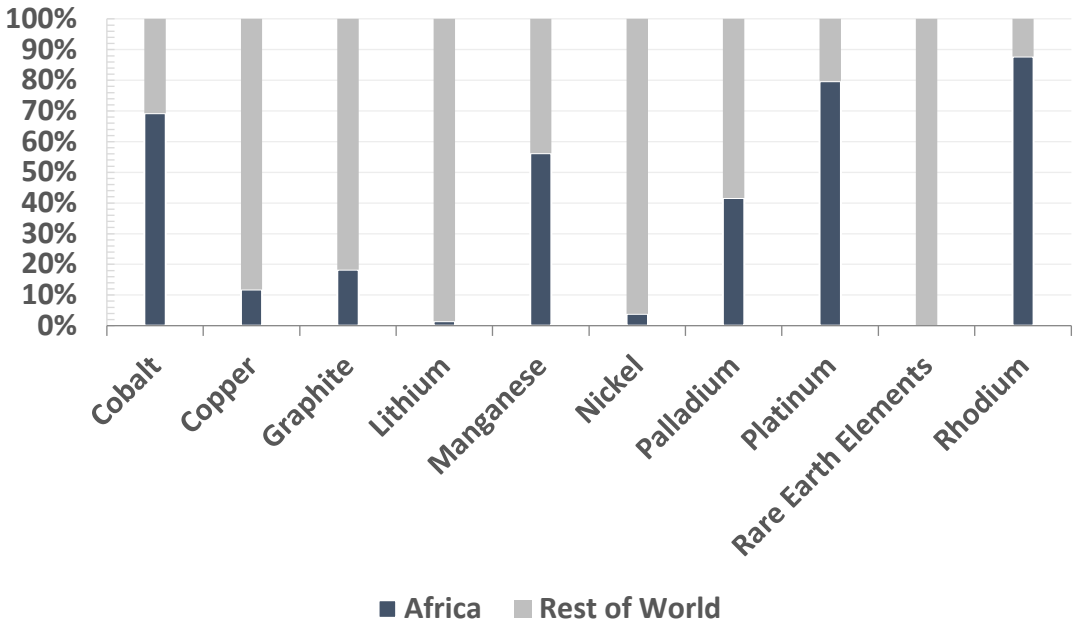


Source: S&P Global, 2021

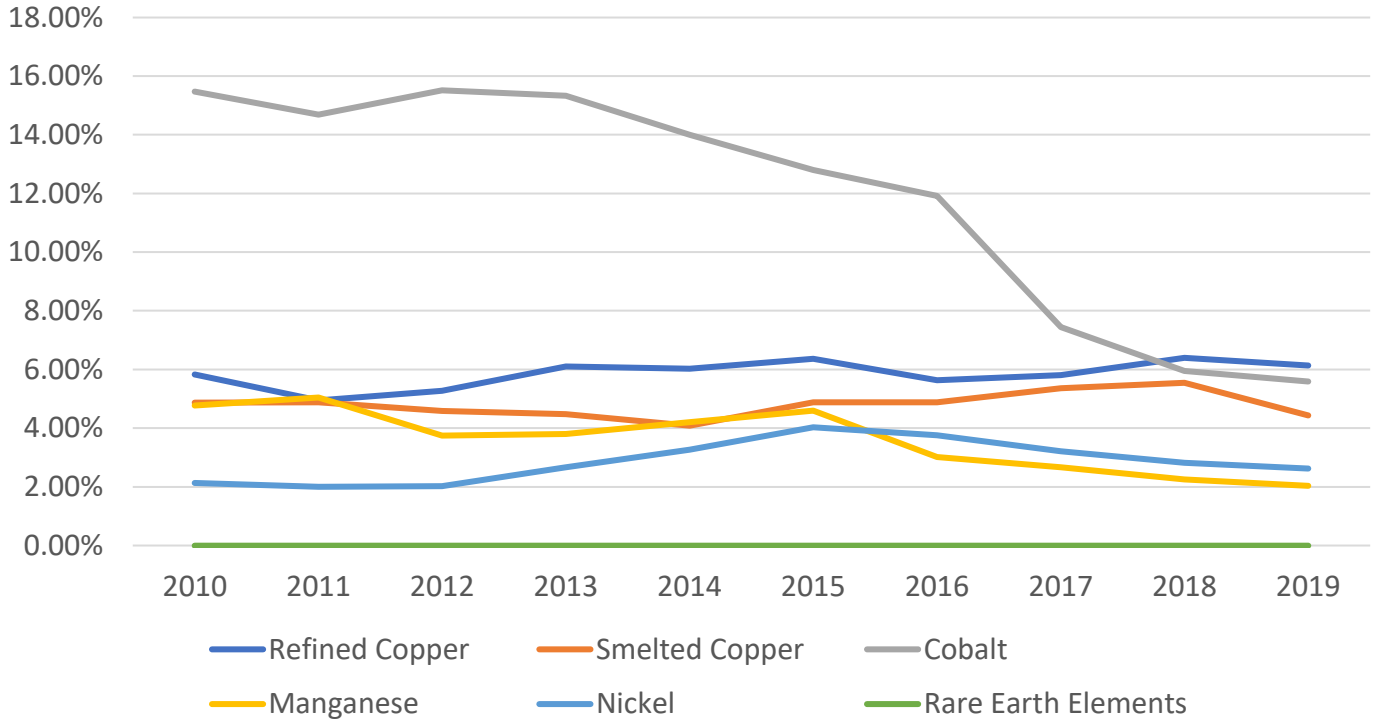
Note: Africa's share in dark blue

3. High production but limited transformation

African share of global mineral production (2019)



Africa's share of global primary and refining production (2010-19)



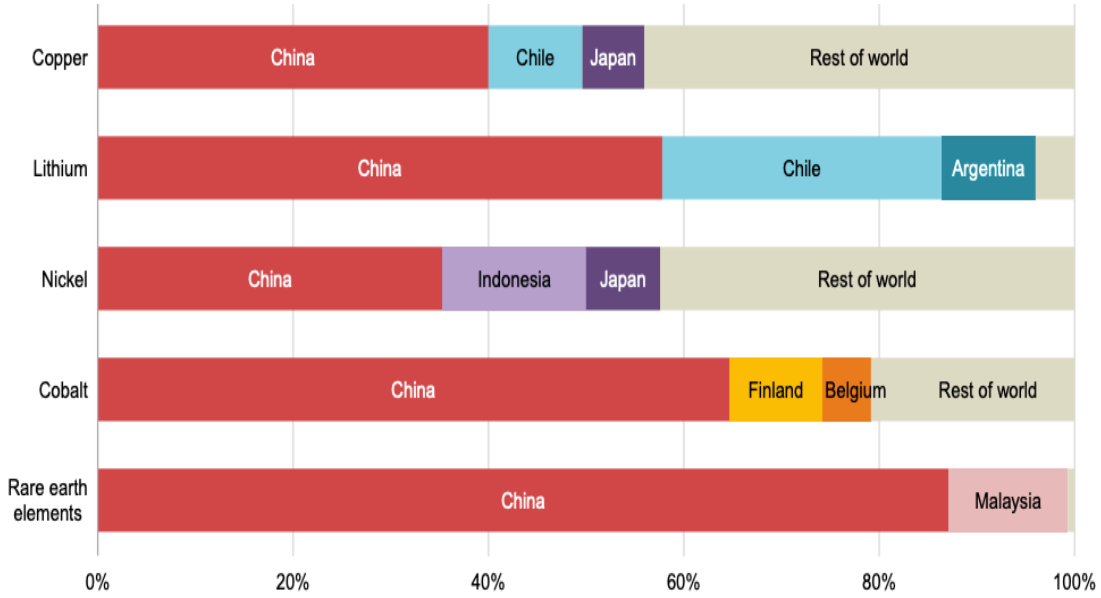
Growth in production: 2010 - 19

% growth (2010-19	Cobalt	Copper	Graphite	Lithium	Manganese	Nickel	Platinum	Palladium	Rhodium	REEs
Africa	-6.2%	81.0%	**4508%**	49.2%	**121.5%**	40.9%	-4.2%	0.7%	1.9%	Negligible
Rest of World	27.5%	23.5%	-7.7%	248.9%	-10.9%	69.9%	10.6%	25.6%	17.2%	66.8%

Source: World-mining-data

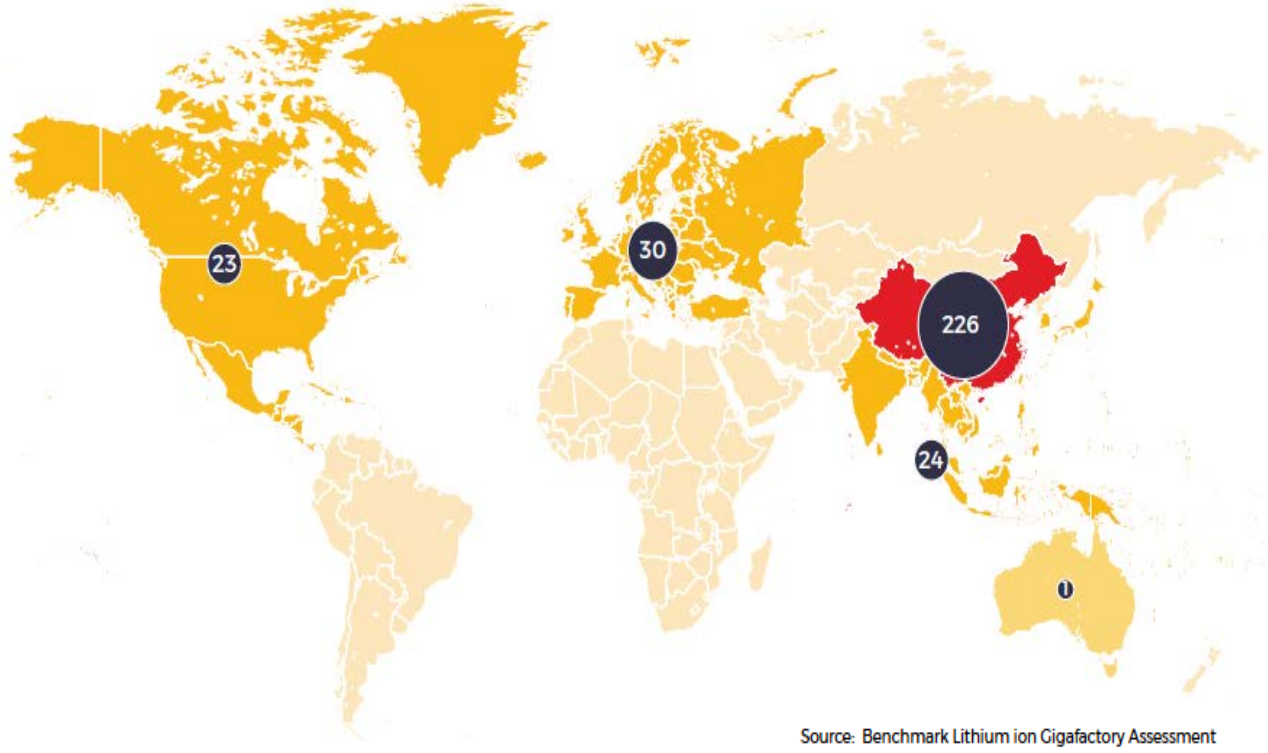
Demand will not slow down in the future and downstream industries will follow midstream ones

Share of top 3 processing countries in processing of CRM (2019)



Source: (IEA, 2021)

No. of lithium-ion gigafactories in the pipeline, where China dominates the market.



Source: Benchmark Gigafactory Assessment (2021)

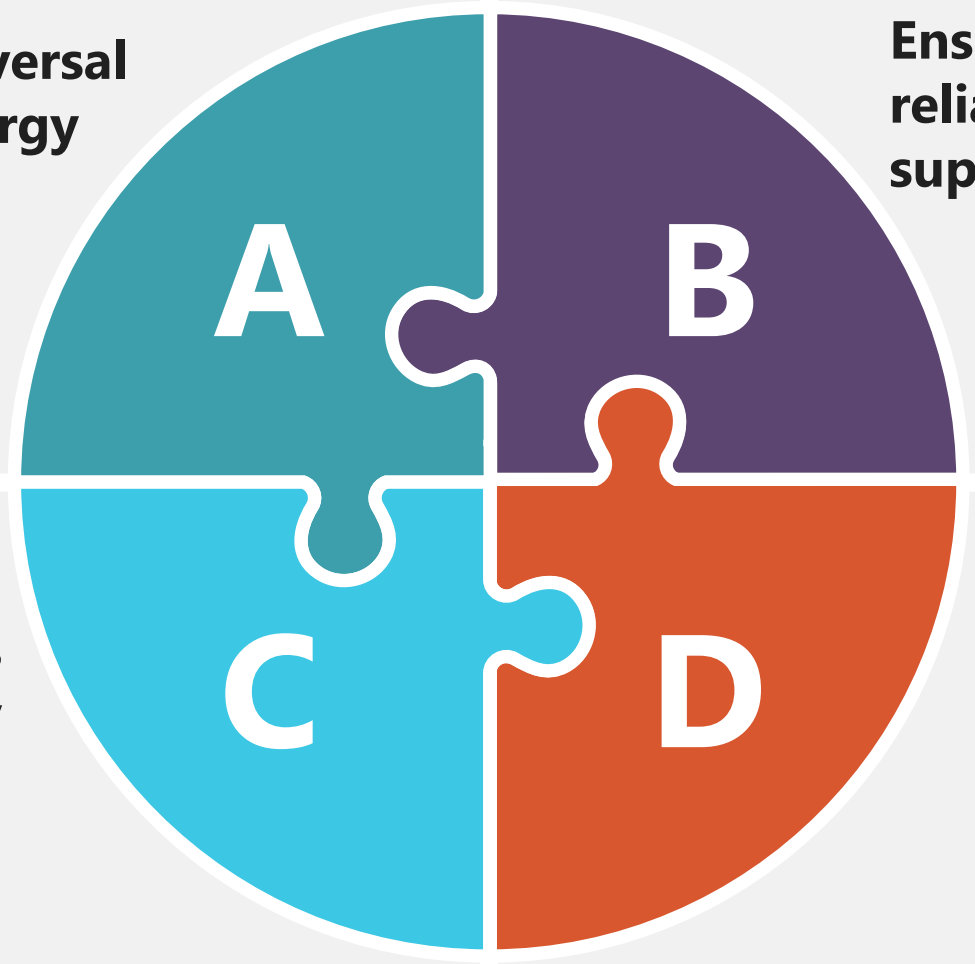
4. Biggest challenge: Africa's energy quadrilemma

01 Securing universal access to energy

02 Ensuring stable and reliable energy supply

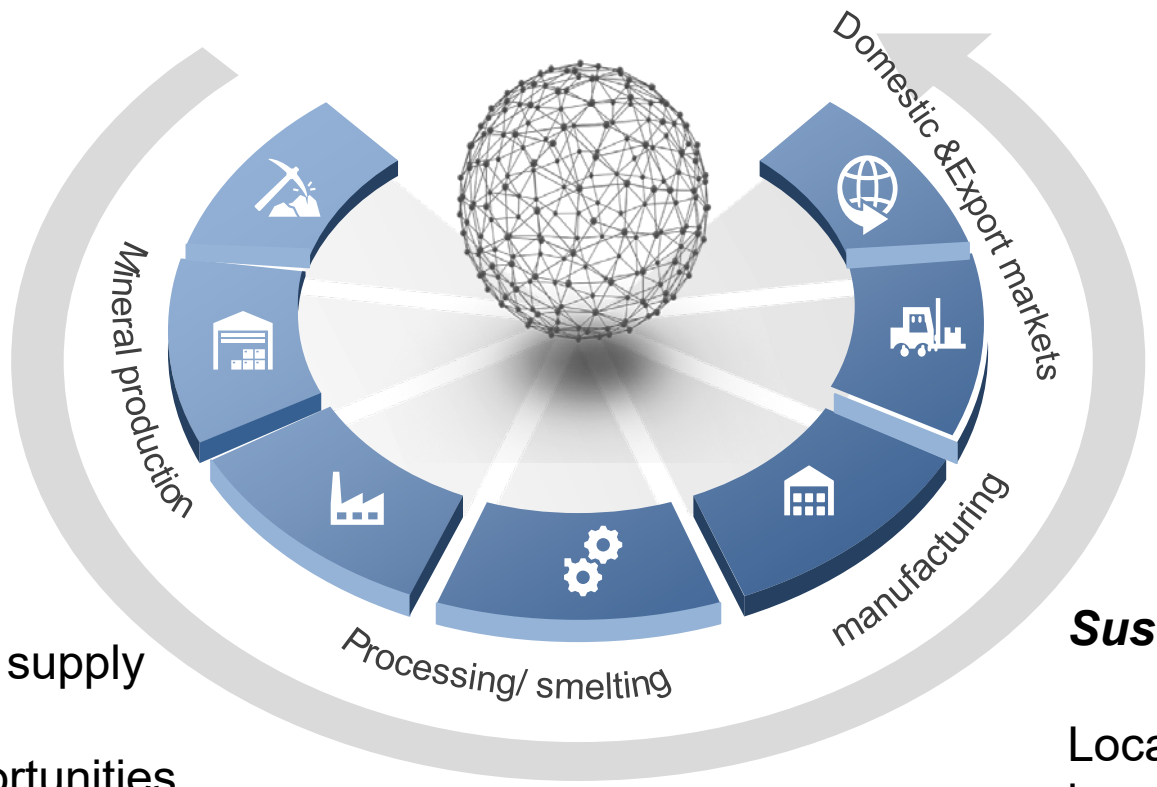
03 Ensuring affordable costs of energy

04 Minimizing negative environmental externalities liked to climate change



5. Building resilient domestic value chains: Not a choice, an imperative

Building domestic value chains is key to create industries, value and jobs in Africa



Energy justice necessity:

African CRMs should be used as inputs to develop its own energy solutions to address its quadrilemma

Diversification imperative:

- Upstream opportunities to supply mining operations
- Mid and downstream opportunities for higher value-added products

Sustainability responsibility

Local supply chains have a lower carbon footprint

6. Regional and continental value chains are critical

- Countries won't do it alone, regional cooperation is key
- Need to identify strategic sectors to build industrial capacity: Existing plans for renewable energy and automotive sector
- Regional initiatives under way: DRC – Zambia SEZ for battery precursors; automotive VC in Morocco; Hydrogen Fuel cells in South Africa
- Regional and Continental strategies will facilitate the process: Africa Green Minerals Strategy must be domesticated
- Regional and continental instruments must be leveraged : Regional FTAs; ACFTA

Key producing countries of selected minerals

Mineral	End-use	Selected African producers
Cobalt	Battery chemistries	DRC, Zambia, Morocco, Madagascar
Copper	All industries, incl. construction, automotive, renewables, digital technologies	DRC, Zambia, many others
Graphite	Battery chemistries	Mozambique, Madagascar
Lithium	Battery chemistries	Zimbabwe, Namibia, DRC, Ghana
Manganese	Iron and steel-making, battery chemistries	South Africa, Gabon, Ghana
Nickel	Iron and steel-making, battery chemistries	South Africa, Madagascar
PGMs	Catalytic converters, fuel cells	South Africa, Zimbabwe
REEs	Permanent magnets for wind turbines and electric motors	Burundi

Source: S&P Global, 2021

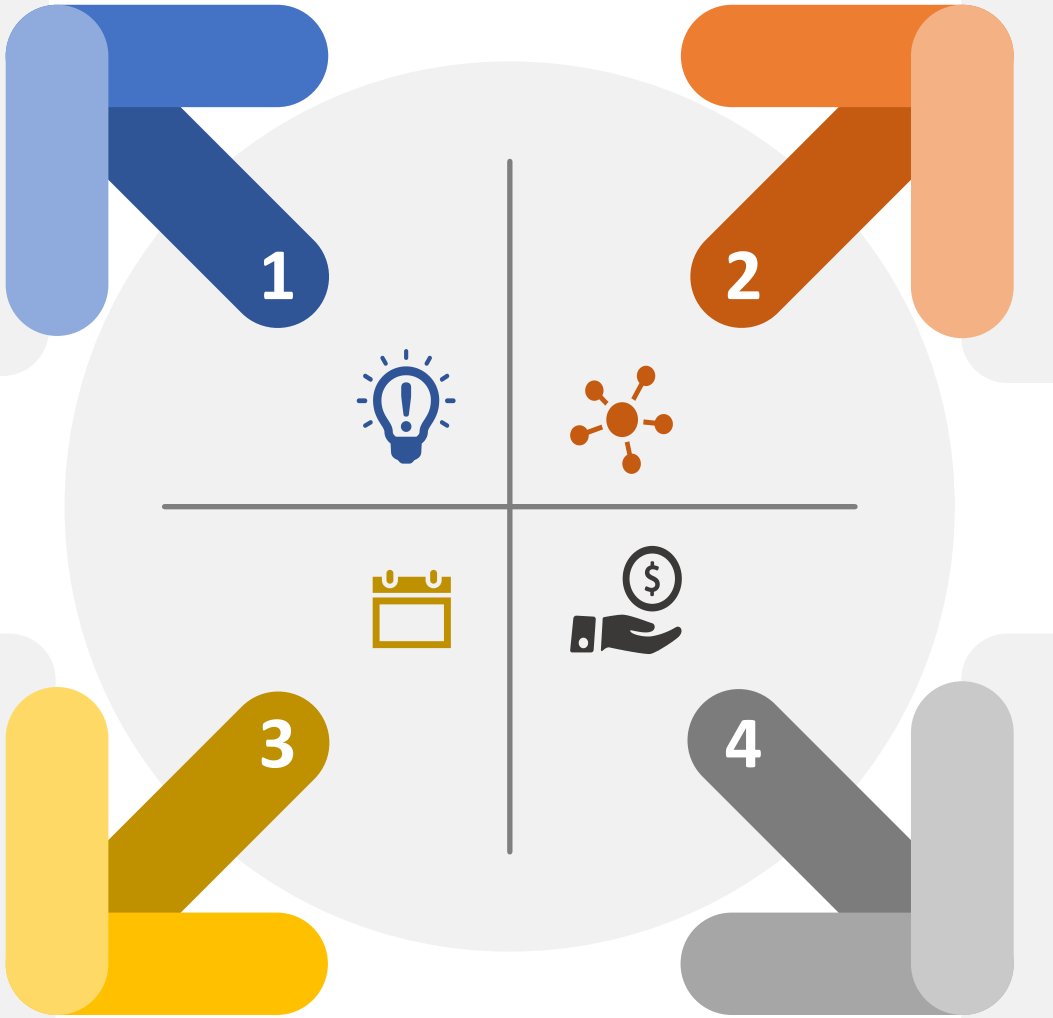
7. Africa must position itself as a supplier of choice at the global level

1. **A geostrategic priority to provide choice to the market**

2. An opportunity to become a partner of choice

3. An opportunity to build domestic and regional priorities with perspectives of securing global markets

4. An opportunity to drive climate change actions at global level



Conclusions

The moment is NOW

Substantial efforts being made to address risks and bottlenecks in supply chains

Window of opportunity is small and narrowing

Demand will not fall, but attention on ‘critical’ minerals may wane as solutions to risks are found

THANK YOU

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